

## 220120 - Automobile Electronics

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering  
 Teaching unit: 710 - EEL - Department of Electronic Engineering  
 Academic year: 2019  
 Degree: BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Optional)  
 ECTS credits: 3 Teaching languages: English

### Teaching staff

Coordinator: DAVID GONZALEZ DIEZ

### Teaching methodology

**Theory classes:** In this lectures, teachers will introduce basic concepts of system operation and description of components. Special attention will be paid to system modeling and simulation (MATLAB/Simulink). All these explanations are system oriented and they will be illustrated with real examples to facilitate their understanding.  
**Self-study:** Students need to work on the tasks assigned by teachers in order to develop solutions according to the problem requirements. These tasks will be focused in the modeling and simulation of a given system. Students will be asked to prepare written reports of the assigned tasks related to Modules 2 and 3. Teachers provide the curriculum and monitoring of activities through ATENEA.

### Learning objectives of the subject

This course gives an introductory overview of electronic systems in a modern car. It covers a description components, system architecture and operation. The course also considers the modeling and simulation of these systems. At the end of the course, students should be able:

- to know the basics principles, components and operation of electronics systems in a car
- to model and simulate the performance of these systems

### Study load

Total learning time: 75h	Hours large group:	30h	40.00%
	Self study:	45h	60.00%

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### Content

<p>Module 1: Introduction to Car electronics</p>	<p>Learning time: 12h 30m Theory classes: 5h Self study : 7h 30m</p>
<p>Description: Role of electronics in a modern car. Description of systems architecture. Modeling tools.</p> <p>Related activities: Final exam.</p>	
<p>Module 2: Systems of driving assistance</p>	<p>Learning time: 25h Theory classes: 10h Self study : 15h</p>
<p>Description: This module deals with systems of driving assistance such as Anti Block System (ABS) or Anti Slip System (ASS), covering basic systems description, operation and simulation.</p> <p>Related activities: Homework related to Module 2 Final exam.</p>	
<p>Module 3: Systems of engine management</p>	<p>Learning time: 25h Theory classes: 10h Self study : 15h</p>
<p>Description: This module deals with systems of engine management and monitoring, such as Electronic Fuel Injection, covering basic systems description, operation and simulation.</p> <p>Related activities: Homework related to Module 3 Final exam.</p>	

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Module 4: Communications between systems. Introduction to CAN bus	Learning time: 12h 30m Theory classes: 5h Self study : 7h 30m
Description: This module introduces the CAN bus. Main features and characteristics of CAN bus. Examples of application.	
Related activities: Final exam.	

### Qualification system

The final grade depends on the following assessment criteria:

- Homework related to Module 2, weight: 25 %
- Homework related to Module 3, weight: 25 %
- Final exam, weight: 50 %

Any student who wishes to improve his grade may try it at the exam planned at the end of the course. The best note is preserved

### Bibliography

Others resources: